4-24-2021

Depression Symptoms and COVID-19

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Date of Submission: April 24, 2021

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Abstract

The COVID-19 pandemic presents new challenges in behavioral healthcare. Americans may face anxiety surrounding the virus, economic strain, isolation, and grief, putting them at increased risk for depression symptoms. This Doctor of Nursing Practice (DNP) quality improvement project aimed to increase depression screening rates and utilized data from a Federally Qualified Health Center (FQHC) to identify population groups at higher risk for depression symptoms during the COVID-19 pandemic. Using the Patient Health Questionnaire (PHQ) depression screening tool, a statistical analysis determined if being tested for COVID-19 or testing positive for COVID-19 had an impact on depression symptoms. Additionally, this project identified if there was a change in behavioral health utilization at the FQHC. The results of this project found that depression symptoms did not increase during the COVID-19 pandemic in patients at the FQHC. The FQHC is successful in meeting their depression screening goal but positive depression screening was missed in visit documentation about 10% of the time. Behavioral health utilization was difficult to estimate due to a loss of providers at the FQHC. Overall, this project provided insight into the effect the COVID-19 pandemic had on depression symptoms and the impact on behavioral healthcare at the FQHC.

Keywords: COVID-19, depression, screening, mental health, telemedicine, integrated behavioral health

Depression Screening and COVID-19

The purpose of this paper is to detail a Doctor of Nursing Practice (DNP) quality improvement project designed to examine data regarding depression symptoms and COVID-19 at a Federally Qualified Health Center (FQHC) in Northwest Arkansas. This paper will discuss the behavioral health needs that surround the COVID-19 pandemic and the strategies to identify patients who could benefit from behavioral health services. Data was collected from the electronic medical record.

Background and Significance

COVID-19 is a novel coronavirus that was first identified in December 2019 in Wuhan, China (Centers for Disease Control and Prevention [CDC], 2020). As of March 2021, according to the World Health Organization (WHO), there have been over 117 million confirmed cases in the world. COVID-19 is primarily passed through person-to-person transmission via respiratory droplets and has been spreading rapidly across communities since first identified. Due to its method of transmission, social distancing measures are vital in mitigating viral spread. Public health measures have included school and non-essential business closures, bans on public gatherings, travel restrictions, contact tracing, and isolation/quarantine measures (CDC, 2020). People with COVID-19 may experience a wide range of symptoms from mild to severe. The

most common symptoms are fever, cough, and fatigue, and the most common complication is pneumonia.

The first case of local transmission of COVID-19 in the United States (US) occurred in January (CDC, 2020). A public health emergency was declared on January 31st, but the US lagged in creating and dispersing functional COVID-19 test kits. A national emergency was declared on March 13th and the US Food and Drug Administration (FDA) began allowing private companies to develop tests (FDA, 2020). By the end of March, there were confirmed cases in all 50 states and nationwide shortages of personal protective equipment (CDC, 2020). As of March 2021, the United States has more active cases of COVID-19 than any country in the world (WHO, 2020). The death count in the US surpassed 550,000 as of March 2021 (CDC, 2021).

The FDA declared an emergency use authorization for the first vaccine for the prevention of COVID-19 on December 11, 2020 (FDA, 2021). As of March 2021, there are three vaccines authorized for the prevention of COVID-19: Pfizer-BioNtech, Moderna, and Johnson & Johnson /Janssen (CDC, 2021). There are two additional vaccines in large-scale (phase 3) clinical trials.

The COVID-19 pandemic has resulted in changes in the daily life of many Americans, such as changes in employment (e.g., remote access, furlough, and unemployment), home-schooling children, and isolation from family and friends (CDC, 2020). Nearly one in four Americans filed for unemployment by the end of March 2020 (U.S. Bureau of Labor Statistics, 2020). Historically, morbidity and mortality related to mental health have spiked during times of economic recession (Frasquilho, et al., 2016). Data from a previous outbreak of infectious disease indicates that the number of people whose mental health was affected was greater than the number of people who were physically affected by the infection (Reardon, 2015). The

recommended social distancing measures may also contribute to poor mental health outcomes. A rapid review found that quarantine measures are associated with negative psychosocial effects including depression symptoms (Rohr et al., 2020).

Prior to COVID-19, the United States healthcare system was unable to meet the mental healthcare needs of Americans. The prevalence of depression in adults over the age of 20 is 8.1% (Brody et al., 2018). Despite this, only 6% of adults in the US reported receiving outpatient mental health treatment in the past 12 months (Han, et al., 2016). Of those diagnosed with a mental health condition, 33% reported having received mental health services in the past year (Walker et al., 2015). The demand for behavioral health services exceeds the availability of providers; approximately 80% of all US counties are designated as mental health professional shortage areas (HRSA, 2020). In Arkansas, a mental health professional shortage area (MHPSA), there are 13 psychiatric workers per 100,000 residents (Beck, et al., 2018). Furthermore, those that received regular mental health care prior to the COVID-19 outbreak may find their behavioral health care providers inaccessible. In China, 17.2% of patients reported they stopped taking their psychiatric medications because they could not gain access to prescriptions from physicians during the outbreak (Zhou et al., 2020).

After the COVID-19 outbreak in China, there was a 74% drop in the reported emotional wellbeing of the Chinese population (Yang & Ma, 2020). In a survey of American adults, fear of COVID-19 was positively correlated with depression and anxiety symptoms (Fitzpatrick et al., 2020). Another survey identified Americans were three times more likely to have depression symptoms during the COVID-19 pandemic as compared to before (Ettman, et al., 2020). The attributes: lower income, increased stressors, and less money in savings were associated with greater depression symptoms. Following the immediate effects on morbidity and mortality,

disasters have lasting impacts on the mental well-being of survivors. An analysis of data from Hurricane Katrina uncovered the stressors: loss of a loved one, fear for one's safety, and uncertain access to medical care had significant negative effects on mental health for 12 years following the disaster (Raker et al., 2020).

Some protective variables may reduce the mental health risks that follow trauma. For example, higher levels of perceived social support two months after exposure to a traumatic event can reduce the development of depression symptoms (McGuire et al., 2018). In January 2020, the National Health Commission of China integrated mental health crisis interventions into their general COVID-19 disease prevention (Li et al., 2020). The Anxiety and Depression Association of America is calling for a proactive mental health response amid the COVID-19 pandemic (Marques et al., 2020). These strategies include an early identification of mental health symptoms through valid screening tools and a timely referral to appropriate behavioral health services.

Problem Statement

The problem statement for this DNP quality improvement project is that the behavioral health services at the clinic may not have met the increased demand as a result of the COVID-19 pandemic. Data regarding COVID-19, depression screening rate, depression symptoms, and behavioral health utilization would provide useful insight into the clinic's ability to meet the need for behavioral health services for patients during this tumultuous time. Individuals experiencing stress related to the COVID-19 pandemic may be at greater risk for experiencing depression symptoms (Ettman, et al., 2020). Due to this being an emerging problem, the clinic will benefit from information that identifies populations that are at risk and evaluates the availability of behavioral health services.

Purpose Statement

The purpose of this DNP quality improvement project is to ensure the clinic is reaching its goal for depression screening rate and analyze data on depression symptoms and behavioral health services at the clinic before and during the COVID-19 pandemic. Identifying the mental health risks associated with COVID-19 can allow for a targeted response from healthcare providers and connect patients in need with treatment options. Analyzing this data will inform the clinic which populations may be at greater risk for depression symptoms during this unprecedented time and allow for a proactive response. This information will also recognize if the availability of behavioral health services matches the clinic's population demand.

Needs Assessment

Objective

The objective of this needs assessment is to identify the gaps in the mental healthcare of patients affected by COVID-19 at an FQHC in Northwest Arkansas. The outbreak of COVID-19 has caused an increase in stress in many populations due to fear of illness, financial stress, and social isolation (Mazza et al., 2020). These stressors may be especially pronounced in those of low socioeconomic status (Raker et al., 2020). Stressful life events have been linked to changes in the brain that make someone more likely to develop depression symptoms (Yang et al., 2015).

Participants

The participants of this needs assessment were chosen as key stakeholders involved in mental healthcare services at the clinic. The Quality Manager, Behavioral Health Director, Director of Nursing, Outreach Coordinator, Office Manager, and Clinical Manager provided

insights regarding the effect of COVID-19 on mental health. Collectively, the diverse role of participants offered key insights into the gaps in care for this group.

Rationale

Mental health services are most efficient when integrated with primary healthcare services (Balasubramanian et al., 2017). Patients who have been tested for COVID-19 may experience anxiety about their health and the health of their household members, as well as reduced or lack of income, food insecurity, and disruption of normal social activities. The clinic typically administers the Patient Health Questionnaire (PHQ) depression screening tool to all patients over the age of 12 at every visit. This practice is well established at the clinics, and staff is familiar with the screening tool and procedure. Patients are often offered behavioral health services the same day that they screen positive for depression symptoms.

Data Collection

The needs assessment utilized key informants to collect information regarding the gaps in mental healthcare of patients who are tested for COVID-19. The questions were broad in order to generate observations and ideas from staff about unmet needs and possible strategies to address these described needs. Staff members were asked to identify the gaps in care as well as why these gaps exist, negative outcomes that may result from these gaps, previous strategies that were used in an attempt to close these gaps, and suggestions on possible solutions. One final question assessed the workplace culture and readiness to participate in the project. A total of six open-ended questions were presented to the staff members.

Interviews

A total of six staff members were interviewed. A convenience sample of participants was selected for the interviews based on experience and expertise related to the project problem.

Interviews were conducted over the last week of May 2020 and each took approximately 10-15 minutes to complete. Please see Appendix G for the needs assessment questionnaire.

Implementation and Analysis

The interviews were completed in person, over the phone, and via email communication. Clarification was provided when requested and staff were encouraged to provide any additional information they felt was relevant.

One of the key findings included a common consensus that adaptations are needed in current practices in order to meet the emerging mental healthcare needs associated with the COVID-19 pandemic. Multiple staff members identified that many patients who come for testing are not established patients. It was suggested that screening patients for depression who are also tested for COVID-19 would identify at-risk patients and connect them with services that previously may have been financially inaccessible to them, given that FQHCs provide services to all people regardless of their ability to pay.

Multiple staff members reported that patients expressed stress related to financial strain and fear surrounding the virus. A patient outreach team member identified that the number of patients in need of food was at an all-time high since the start of this team member's employment. A staff member reported that behavioral health counselors conducted some telemedicine visits via webcam but many via telephone due to patients' technological access. One staff member reported that the feasibility of the intervention would be a significant concern as the clinic is already overwhelmed with the current patient volume related to COVID-19. In addition, all staff interviewed felt that the staff would support initiatives to improve gaps in care.

This data is useful for identifying gaps to focus on developing strategies to improve resulting patient outcomes. The data also demonstrates a workplace culture that is open to changes and supportive of evidence-based practice.

Aim and Objectives

Aim

The aim of this project was to identify if there was a change in depression symptoms or behavioral health utilization during the COVID-19 pandemic. It is important to work on this now because a culmination of variables associated with COVID-19 contribute to the development of depression symptoms and the accessibility of behavioral health treatment.

Objectives

- Ensure 80% of adult patients are screened with the PHQ
- Ensure positive PHQ screening is addressed during the appointment based on documentation
- Determine if there is an increase in PHQ score in adult patients during the three-month implementation period compared to the same three months in the previous year
- Identify if there is a specific demographic group that had greater change in mean PHQ score from the three-month implementation period compared to the same three months in the previous year
- Identify if there was a change in behavioral health utilization from the three-month implementation period compared to the same three months the previous year

Review of Literature

A literature review was conducted using MEDLINE Complete (EBSCO) with the key words *COVID-19, coronavirus, mental health, mental illness, mental disorder, psychiatric illness, depression screening tool, integrated behavioral health, and telemedicine*. Articles were limited to publication dates 2015-2020. The search was assisted by a research librarian and initially yielded 526 articles. Exclusion criteria included editorials and articles that were not relevant to the project topic. The search uncovered grey literature from the Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and data from Health Resources and Services Administration (HRSA). Twenty-four articles were included in this literature review.

The COVID-19 pandemic is an unprecedented public health crisis. Many are impacted directly through exposure, infection, hospitalization or death and indirectly through financial stress and job loss. In an online survey conducted before and during the COVID-19 pandemic, participants scored significantly worse in depression, anxiety, wellbeing, and resilience measures during the outbreak (van Agteren et al., 2020). The Principles of Mental Healthcare during the COVID-19 Pandemic (2020) established by the European Psychiatric Association recommends that health policy developers consider the consequences of the restrictive social distancing measures. Previously unaffected populations may experience mental disruptions and disorders as a result of isolation, monitoring, and quarantining (Rohr et al., 2020).

Special Populations

Female Gender/Pregnancy

Prior to the COVID-19 pandemic, data demonstrated a higher prevalence of depression in women than men in the United States (National Institute of Mental Health, 2017). During the

COVID-19 outbreak in Spain, female gender was a predictor of post-traumatic stress symptoms and anxiety in a large-scale survey (González-Sanguion et al., 2020). Additionally, female healthcare workers were more likely than their male counterparts to suffer anxiety and depression symptoms during the COVID-19 outbreak. In China, pregnant women assessed for depression had significantly higher rates than those assessed prior to the outbreak (Wu, et al., 2020). Pregnant women in Canada have reported higher levels of depression, anxiety, and symptoms of PTSD since the declaration of the COVID-19 pandemic (Berthelot et al., 2020).

Older Adults

Age was positively correlated with a reduction in emotional wellbeing during the pandemic in China (Yang & Ma, 2020). Risk for severe illness from COVID-19 increases with age (CDC, 2020). People over age 55 have more severe psychological symptoms during the pandemic possibly due to anxiety and fear associated with their higher likelihood of death if infected with COVID-19 (Tian et al., 2020).

COVID-19 Positive Patients

There is a strong association between the severity of physical symptoms of COVID-19 and the depth of psychological impact (Wang et al., 2020). A large-scale survey in Spain revealed that current or previous symptoms of COVID-19 were positively correlated with depression, anxiety, and PTSD symptomology (González-Sanguino et al., 2020). Additionally, respiratory symptoms caused by COVID-19 have been linked to the release of pro-inflammatory cytokines, which have previously been associated with major depressive disorder (Wang et al., 2020).

Screening Tool

The US Preventative Task Force (2016) recommends routine screening for all adults, regardless of risk factors for depression. The Patient Health Questionnaire-2 (PHQ-2) and Patient Health Questionnaire depression module (PHQ-9) are the most widely used depression screening tools (Maurer et al., 2018). The PHQ-9 is a nine-item screening instrument used for detecting depression and classifying the severity (Levis et al., 2020). Additionally, the PHQ-2 makes up the first two items of the PHQ-9 and can be used to identify patients for further evaluation with the complete PHQ-9. In a systematic review and meta-analysis, it was identified that using this combination of the PHQ-2 and PHQ-9 did not result in a statistically significant difference in screening outcomes than the PHQ-9 alone (Levis et al., 2020). Additionally, this strategy reduced the number of participants who need to complete the full PHQ-9 by 57%. Furthermore, the PHQ-2 has optimal sensitivity and specificity in the identification of depression symptoms (Staples et al., 2019). It is also brief enough to be administered during short interactions or consultations. The PHQ-2 has demonstrated its validity with diverse population groups (Gelaye et al., 2016; Rancans et al., 2018).

Telemedicine

After gaining experience during the peak of the outbreak in Italy, the Department of Mental Health and Addiction in Lombardy recommended turning to appropriate e-technologies and procedures and developing interventions to mitigate the harmful effects of quarantine (de Girolamo et al., 2020). In addition, the Italian Society of Epidemiological Psychiatry (2020) recommended outpatient visits be replaced with phone and video calls when possible. Psychological assessment and treatment via telemedicine for depression is found to be clinically effective and comparable to therapy delivered in-person (Palylyk-Colwell & Argáez, 2018). In the United States, prior to the COVID-19 pandemic, restrictions on Medicare and other private

payers' reimbursement limited the accessibility of telemedicine behavioral health services (Lau et al., 2020). Yet, following the expansion of telemedicine by CMS with the 1135 waiver, healthcare organizations were financially able to increase their virtual behavioral health services. Telemedicine services allow the behavioral health providers to continue to meet with patients for counseling sessions and appointments for medication management while also keeping the patient safe in their home and avoiding opportunities to spread COVID-19.

Integrated Behavioral Health

Integrated behavioral health is a care model that involves coordinating behavioral health with primary care in order to improve patient outcomes. Integrating behavioral health care into primary care results in improved mental and physical health outcomes as well as enhanced quality of life (Flynn et al., 2020). This care integration promotes collaboration among providers and gives nonmedical providers a role in augmenting primary care. Patient participation in integrated behavioral health can result in the improved management of chronic illnesses and increased access to behavioral health services (HRSA, 2020). The United Kingdom National Health Service (NHS) described many benefits from its integrated behavioral health model during the COVID-19 pandemic (Tracy et al., 2020). The NHS formed mental health and physical health crisis response teams that focused on mitigating both the physical and emotional risks of COVID-19. Together the crisis teams were able to respond efficiently to patients' emerging health needs.

Conclusion

Evidence indicates support for integration of mental health services into the care of patients that are tested for COVID-19, as well as special considerations made to ensure at-risk populations are screened and treated for depression. Populations including female gender,

pregnancy, older adults, and patients that have tested positive for COVID-19 or have symptoms. The PHQ can be quickly incorporated into primary care practice so that patients can be screened for depression symptoms. Appropriate follow-up visits with the patients who screen positive are recommended. Telemedicine services will allow patients increased access to behavioral healthcare while decreasing opportunities for viral spread.

Theoretical Framework

The conceptual framework that guided this DNP project is the Johns Hopkins Nursing Evidence-Based Practice Model and Process (Dang & Dearholt, 2018). This model provided guidance for the development of the practice question, gathering of evidence, translation, as well as outcome analysis. The Johns Hopkins Nursing Evidence-Based Practice Model and Process (JHNEBP) outlines the steps for the project as well as the practice environment necessary for implementation of evidence-based practice changes. The model is designed to prompt continued learning at all steps of the process. The identification of the problem and development of the practice question is detailed through the Practice, Evaluation, and Translation (PET) process. It presents guidelines for identifying and synthesizing quality evidence that supports the change. The recommendations for translation are practical and detailed. This DNP project utilized this framework in order to keep ideas and evidence organized and ensure successful translation.

Theory

Inquiry

According to the JHNEBP, before the initiation of the process it is vital to cultivate a culture of inquiry within the healthcare organization. The inquiry process involves approaching one's practice with ongoing curiosity regarding the best evidence for clinical practice. The JHNEBP model proposes questions that should drive the nurse's practice including whether the

best evidence is being used and whether the care provided is optimal. The culture of inquiry outlined in the JHNEBP is demonstrated at the clinic through its staff's willingness to adapt to emerging recommendations in behavioral healthcare practice.

Practice

Following inquiry in the JHNEBP is the Practice phase. When developing an answerable practice question, it is necessary to use an interdisciplinary team and to clearly define the problem. In this case, the interdisciplinary team consisted of administrators, health care providers, nurses, medical assistants, and the behavioral health team. Through the Needs Assessment, the problem was identified as a lack of mental health focus related to the COVID-19 pandemic, a practice that has been proven to be evidence-based as the integration of behavioral health and primary care enhances the patient's experience of care (Balasubramanian et al., 2017). As this has been a long-term policy at this FQHC, many staff members have observed the effectiveness and efficiency of the integrated behavioral health model.

The next step in the Practice phase of the JHNEBP is the formulation of a narrowly focused question that uses the PICOT mnemonic. The developed practice question which follows the PICOT mnemonic is: In patients at an FQHC, how does the COVID-19 pandemic, compared to prior to the COVID-19 pandemic, affect the demand for and availability of behavioral health services?

Evidence

The second phase of the JHNEBP model PET process is the evidence phase which includes searching, appraising, summarizing, and synthesizing the evidence. The developed recommendations for change should be based upon the synthesis of quality evidence. The evidence was synthesized in the review of literature which demonstrated the need for behavioral

health interventions to be integrated into the management of COVID-19. Once sufficient evidence has been analyzed and determined to be both compelling and consistent, the practice change can begin the translation process.

Translation

Translation is the third phase of the PET process. In this phase it is necessary to consider the feasibility and appropriateness of the practice change and then develop an action plan. Major barriers considered during development of the action plan include time and data management. It will be important to stay organized when managing large volumes of data and also conducting multiple statistical analyses.

Best Practices

Best Practices is the next phase in the JHNEBP model. This phase evaluates the outcomes of the practice change. The mean PHQ of adult patients during the three month period of 2019 was compared to the mean PHQ of adult patients during the same three months of 2020. Demographic data was collected in order to compare the demographics of the 2019 and 2020 patients to ensure the population samples were comparable and validate findings.

Practice Improvements

Practice Improvements is the final phase of the JHNEBP. This included reporting outcomes to stakeholders, identifying the next steps in continued practice change, and disseminating findings. Findings were disseminated and utilized to develop a proactive behavioral health response at the clinic.

Implications for Practice

The JHNEBP model allows for the assurance of sustainability in practice through the considerations of fit, feasibility, and appropriateness. In order to ensure successful action

planning, one must consider internal and external factors. The JHNEBP model is an open system and is continually influenced by internal and external factors. External factors include accreditation bodies, legislation, quality measures, and standards. External factors influencing this project include payers' modification of reimbursement for telemedicine services due to COVID-19. Additionally, recommendations from the Centers for Disease Control and Prevention regarding the continuation of in-person vs. telemedicine visits influenced the project. Internal factors include organizational culture, leadership, practice environment, technological access, and time. An internal factor that influenced the project is staff shortages due to employee exposure to COVID-19. Another internal factor is the availability of behavioral health translators for patients that are non-English speaking. Translators for behavioral health need special training in order to provide culturally competent care (Benuto & O'Donohue, 2016). According to the JHNEBP model, these factors can then be classified as barriers or facilitators to the success of the practice change.

Summary

The JHNEBP model was used to develop the practice question, collect and analyze evidence, translate the evidence into practice, and evaluate the outcomes of this DNP project with the intent to promote mental health care management in patients during the COVID-19 pandemic.

Methodology

Project Description

The project design was quality improvement. The desired outcome was the determination of the impact of COVID-19 on demand and availability of behavioral health services of patients with depression symptoms at the FQHC. The hypothesis was that adult

patients in December 2020-February 2021 would have an elevated mean PHQ score than adult patients in December 2019- February 2020. Other variables that were analyzed include PHQ scores of demographic groups, patients tested for COVID-19, and the COVID-19 test results. Additional outcomes included that the FQHC would reach its goal of screening 80% of all adults with the PHQ-2 and would address all positive screenings in visit documentation. The data collection phase occurred over a three-month time period.

The FQHC aims to screen all adults for depression, identify behavioral health needs, and connect patients with behavioral health services. Analyzing this data aligns with the organization's goals. Due to being an FQHC, the clinics have quality measures related to depression screening. They have two yearly objectives applicable to behavioral health: increasing the behavioral health consultant's visits compared to the previous year and increasing the total behavioral health telemedicine visit rate.

Project Design

A weekly report was generated during the implementation period that identified the percent of adult patients that are screened with the PHQ-2. Additionally, chart reviews were utilized to identify instances in which patients had a positive PHQ-2 screening that was not addressed in the visit documentation. These charts were categorized according to visit reason in order to identify any potential patterns.

The data that was collected through a report generated from the EMR included the patient's medical record number, age, gender, race, ethnicity, PHQ results, COVID-19 test

results, and referral to behavioral health. The data was organized in Excel and analyzed using SAS and SPSS.

Setting

The clinic is an FQHC in Northwest Arkansas and includes four primary care sites in Fayetteville, Springdale, Rogers, and Siloam Springs. There are also seven school-based health centers throughout Northwest Arkansas. As of March 10, 2021, there are 368 active cases of COVID-19 in Benton County and 296 active cases in Washington County (Arkansas Department of Health [ADH], 2021). As of March 2021, 16.12% of the population aged 16 and up in Arkansas, have been vaccinated with at least one dose of the COVID-19 vaccine, while 9.1% of this population group has been fully vaccinated.

Study Population

The study used convenience sampling. All adult patients that presented to the clinic during the implementation period and underwent the PHQ screening tool were included in the results.

FQHCs traditionally serve patients of low socioeconomic status. The clinic has primarily Hispanic and Marshallese patients who have been disproportionately affected by COVID-19 in the Northwest Arkansas area (ADH, 2020). Marshallese make up 1.5%-3% of the population in Benton and Washington counties but accounted for 19% of COVID-19 cases (McElfish, et al., 2021).

Subject Recruitment

Data from adult patients that presented to the clinic during the three month implementation period of December 2020-February 2021 was utilized for the study. Data collected from adult patients that presented during the same three months of the previous year was also utilized.

Consent Procedures

A waiver of consent was pursued per the University's Institutional Review Board recommendation. This project was a retrospective data analysis and aimed to optimize current clinic depression screening practices but did not change the standard of care provided to patients.

Study Measures

Conceptual Definitions. The independent variable of this study is whether the patient presented for a visit in December 2019-February 2020 or December 2020-February 2021. Other independent variables include race, gender, age, whether the patient was tested for COVID-19, and their COVID-19 test results. The dependent variables include the patient's results on the PHQ-2 screening tool, depression screening rate, and addressing the PHQ-2 in the assessment or plan.

The level of depression can be defined conceptually as mild, moderate, or severe. Another conceptual definition would be for COVID-19 positivity which is identified with detected RNA of SARS-CoV-2 on a nasal-pharyngeal swab.

Operational Definitions. An operational definition of depression is the numerical score on the PHQ-2 ranging from 0-6. The operational definition for COVID-19 positivity is that the sample surpassed the detection limit of SARS-CoV-2 RNA.

Outcome Measures. The patients' COVID-19 test results, PHQ-2 screening results, information on referral to behavioral health services, and demographic information were obtained from eClinicalWorks.

Process Measures. The percentage of patients that were screened with the PHQ-2 was assessed throughout the implementation period. It was evaluated weekly through chart reviews that positive PHQ-2 screenings were addressed in visit documentation.

Balancing Measures. Information was gathered on the visits coded per provider per day for the LCSWs in order to estimate behavioral health utilization and appointment availability.

Benefits and Risks

There are minimal risks associated with a depression screening tool. The subjects could have loss of confidentiality of data collected. There is a risk that some patients had a positive PHQ-2 screening but were not offered appropriate treatment.

Subject Costs and Compensation

There will be no cost or compensation for the participants.

Project Timeline

The actual timeline varied somewhat from the expected timeline. The first needs assessment was conducted at the clinical site in February and March 2020 and was rendered

irrelevant following the beginning of the COVID-19 pandemic and rise of cases locally in May 2020. A second needs assessment was conducted in May and June 2020 which resulted in a delayed timeline. Overall, this shortened the amount of time available for dissemination. Please see Gantt Chart in Appendix E for timeline.

Resources Needed and Economic Considerations

Resources include Excel, SAS, SPSS, the project leader's laptop, and PowerPoint for dissemination materials.

Implementation

Study Interventions

Weekly data reports were generated through the clinic's EMR. Data was sorted in Microsoft Excel and organized into tables. When the clinic fell below their goal depression screening rate in week 3 of implementation, an analysis was conducted to determine the care teams with the lowest screening rates. These care teams were reached out to via email and a discussion was generated regarding barriers to screening patients with the PHQ-2. Chart reviews were conducted of charts in which the patient scored 3 or greater on the PHQ-2 screening tool. If there was a safety concern related to the lack of documentation, then the provider was notified.

The table below displays the evolution of this project over time.

Table 1

Time Frame	Proposed Intervention	Evolution Over Time
January-March 2020	Conducted initial needs	COVID-19 pandemic

	assessment and began proposal related to increasing colon cancer screenings	emerged and initially, doctors weren't doing colonoscopies
March 2020-May 2020	Recognized that a topic related to COVID-19 would need to be selected in order to proceed with project	It was difficult to communicate with stakeholders at clinic due to them being inundated with COVID-19
May 2020-July 2020	Started summer clinical and recognized a need for behavioral health intervention related to COVID-19	Developed proposal for implementing depression screening in COVID-19 result phone call
August 2020	Returned to clinic for fall semester and the procedure for managing COVID-19 testing had completely changed	Previous proposal developed was irrelevant as patients were being screened for depression in the clinic and drive through visits had ended
September 2020-November 2020	Modified proposal with the goal of increasing depression screening rates	Planned to include data analysis and identify populations that are at risk for depression symptoms during the pandemic
December 2020-February 2021	Implementation revealed the clinic is generally reaching their goal for depression screening without intervention	Analyze data to determine changes in depression symptoms during the pandemic

Pre-Implementation Phase

During the pre-implementation phase, the data report requests were completed with the IT department. The data-report variables were finalized prior to implementation. Approval from the University's Institutional Review Board (IRB) was obtained on November 19, 2020, and implementation began on December 1, 2020.

Implementation Phase

Evolution of Need. Initially, this project intended to implement the use of a telephone depression screening tool for patients that were being tested for COVID-19 via drive-thru style. Following the unpredictability of an emerging public health crisis, the project adapted with the site as patients were brought inside for clinic visits and COVID-19 testing in September of 2020.

The needs assessment was conducted in the summer of 2020 and identified a need for increased depression screening at the clinic. However, as clinic procedures transformed from summer to fall, the clinic's depression screening rate improved significantly, reaching the clinic goal of 80%. It was found during implementation that the need for the intervention decreased as the clinic met their screening rate goal eleven out of the twelve weeks of the implementation period.

School-Based Clinic Sites. It was recognized in the first few weeks that school-based clinic care teams had significantly lower depression screening rates than the traditional larger clinic care teams. The providers at the school-based clinics were contacted and asked to comment on this phenomenon. The school-based clinics are not staffed with a nurse; they each include an Advanced Practice Registered Nurse (APRN), Medical Assistant (MA), and a front office staff member. Due to this, the APRN will have both 'nurse-only' visit types and traditional provider visits. It is not in the clinic's current protocol to include depression screening in 'nurse-only' visit types. Examples of this visit type include vaccination administration, COVID-19 testing only, or blood pressure check. Including these visits for the school-based care teams lowered their calculated depression screening rate. This was discussed with the clinic's Quality Manager as a potential area for improvement.

This area for improvement was further demonstrated in week four of implementation, when one school-based provider improved their depression screening rate by 32% in one week compared to the previous. After reviewing the provider's schedule and documentation, it was noted that the provider had a substitute MA from a larger clinic site. This observation gave notion to the idea that there were some missed opportunities for depression screening at the school-based sites, the lower screening rate may have more to do with training and routine than lack of opportunity for screening.

Post- Implementation Phase

Following the implementation phase, data evaluation began. The data was compiled into an excel spreadsheet and SAS and SPSS were utilized to perform the data analysis.

The results were disseminated at the clinical site with a PowerPoint presentation during the monthly Quality Team Meeting. The results were disseminated at the DNP intensive in April 2021.

Evaluation of Results

Data Maintenance and Security

Data was collected using the clinic's electronic medical records (EMR) system, eClinicalWorks (eCW). The eCW system was used to retrieve information regarding the PHQ results, COVID-19 testing, behavioral health visits, and demographic data. No patient identification information was extracted from the EMR and clinic account number were used to identify individuals. Data was compiled on a codebook Excel sheet on the investigator's

password protected private computer. The data was not available to any other accessors without the investigator's knowledge and permission.

Data Analysis

Data analysis was completed using a combination of SAS and SPSS with the assistance of an SMSS tutor. A simple percentage calculation using Excel was used to determine the PHQ-2 screening rate. An independent t-test and dependent t-test were utilized to test the hypothesis that patients at the FQHC had a higher mean PHQ-2 score during the pandemic. A one-way ANOVA was used to analyze the PHQ-2 score during both time frames of different demographic groups. An alpha level of 0.05 was used for all statistical tests. Effect size was calculated using Cohen d's for the t-test and η^2 for the ANOVA (Cohen, 1973, 1988). Calculating effect size is appropriate for this data as the large sample size can make a very small difference in means significant. Effect size measures the relationship strength between the independent and dependent variable.

Behavioral health utilization was estimated using visits coded per provider per day and referral count to behavioral health from family practice providers. The percent of behavioral health visits that were conducted via telemedicine was calculated for each month in 2020. Chart reviews were also conducted for all patients that had a PHQ-2 score of greater than 3 throughout the implementation period in order to identify instances in which a positive PHQ-2 screening was not addressed in visit documentation.

Outcome Measures

The independent t-test had a sample size of 4,792 in the earlier time frame and 4,019 in the later time frame. The mean PHQ-2 score in the earlier time frame was 0.47 (*SD*=1.28) while the mean in the later time frame was 0.28 (*SD*=0.99). This decrease in PHQ-2 score was

significant. Although, the effect size was very small. Assumption of equal variance is not met, t-value for unequal variance is reported $t(8753.5)=7.67, p<0.0001$, $d= 0.16$.

The sample size of the dependent t-test was 1,720. The mean PHQ score in the first time frame was 0.35 (*SD*=1.1) and the mean in the later time frame was 0.19 (*SD*=0.81). This was also found to be a significant decrease with a very small effect size. Assumption of equal variance is not met t-value for unequal variance is reported $t(1719)=5.99, p<0.0001$, $d= 0.14$.

A one-way ANOVA was used to determine if there was a difference in changes of PHQ-2 score related to gender. Females were found to have a mean PHQ-2 score of 0.52 (n=3,039, *SD*=1.35) in the earlier time frame and a mean of 0.32 (n=2,494, *SD*=1.06) in the second time frame. Males had a score of 0.37 (n=1,760, *SD*=1.13) and 0.22 (n=1,526, *SD*=0.87) respectively. There was a significant difference in PHQ-2 scores of females and males, $F(1, 8807)= 23.86$, $p<0.001, \eta^{2}_{p}=0.0027$. There was not a significant difference found in the change in PHQ-2 score related to gender, $F(1,8807)=0.80$, $p=0.37$, $\eta^{2}_{p}=0.0001$.

A one-way ANOVA test was also used to analyze the PHQ-2 scores with respect to race and ethnicity. The clinic includes seven categories for race and two categories for ethnicity. The results of the one-way ANOVA are displayed in the table below. There was not a significant difference found in PHQ-2 scores over the two time frames with respect to race, $F(1, 8807)= 0.70$, $p<0.65$, $\eta^{2}_{p}=0.0005$. However, there was a significant difference found in the PHQ-2 scores in the time frames according to ethnicity, although the effect size was very small, $F(1,8807)=4.50$, $p=0.011$, $\eta^{2}_{p}=0.0010$. 'Unreported' ethnicity had a greater decrease in PHQ-2 score from the first time frame to the second compared to the other ethnicity groups.

Table 2

PHQ-2 Score and Race

Race	Period 1 N	Period 2 N	Period 1 Mean	Period 2 Mean	Period 1 SD	Period 2 SD
American Indian/Alaskan Native	41	33	1.276	0.667	2.308	1.555
Asian	48	24	0.188	0.083	0.915	0.282
Black/African American	69	70	0.794	0.500	1.748	1.494
Multiple Races	26	16	0.846	0.688	1.592	1.621
Other Pacific Islander	166	241	0.213	0.133	0.958	0.758
Unreported /Refused to Report	1341	1093	0.348	0.194	1.074	0.780
White	3111	2546	0.512	0.318	1.335	1.054

Table 3
PHQ-2 Score and Ethnicity

Ethnicity	Period 1 N	Period 2 N	Period 1 Mean	Period 2 Mean	Period 1 SD	Period 2 SD
Hispanic or Latino	2959	2492	.317	.180	.998	.773
Not Hispanic or Latino	1517	1267	0.705	.474	1.594	1.297
Unreported /Refused to Report	326	264	0.696	0.289	1.641	0.955

No correlation was found between the average PHQ-2 score and the patient's age in either time frames, r(4017)=-0.08608, p<0.0001, f^2=0.007.

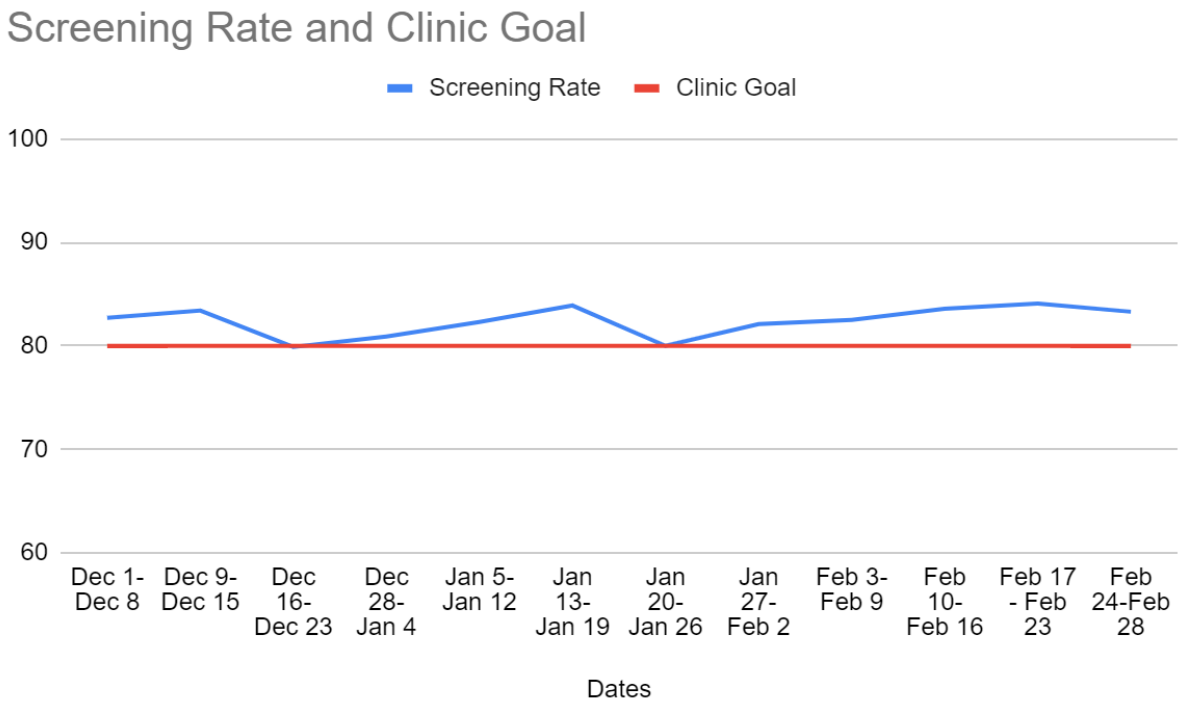
The sample only includes patients that completed a PHQ-2 during the time frames December 2019-February 2020 and/or December 2020-February 2021. Of this sample, the mean PHQ-2 score of patients that were ever tested for COVID-19 at the clinic (*M*=0.19, n=762, *SD*= 0.82) was compared to the mean PHQ-2 score of patients that were never tested for COVID-19 at the clinic (*M*=0.26, n=4,977, *SD*=0.96). This decrease in PHQ-2 score in patients that were tested for COVID-19 was found to be significant, but the effect size was very small, F(1, 5737)= 4.20, p=0.0405, η^2_p=0.0007.

The mean PHQ-2 score of patients that tested positive for COVID-19 (*M*=0.12, n=291, *SD*=0.62) was compared to the mean score of patients that did not test positive (*M*=0.26, n=5,448, *SD*=0.95). Patients that had not tested positive for COVID-19 at the clinic had a higher average PHQ-2 score, F(1, 5737)= 6.44, p=0.0112, η^2_p=0.0011.

Process Measures

The PHQ-2 screening rate was calculated in two separate ways. The first way aligns with the clinic's quality metric and includes any patients that were screened with the PHQ-2 at any time in the 12 months prior to their service date with the time frame December 2020-February 2021. The clinic was found to meet or exceed their goal of an 80% screening rate 11 of the 12 weeks. The line graph below displays the PHQ-2 screening rate in relationship to the clinic's goal.

Graph 1



The PHQ-2 screening rate was also calculated with regards to each visit without consideration of previous screening. This rate was calculated for each month of the year 2020. This is displayed in the line graph below.

Graph 2

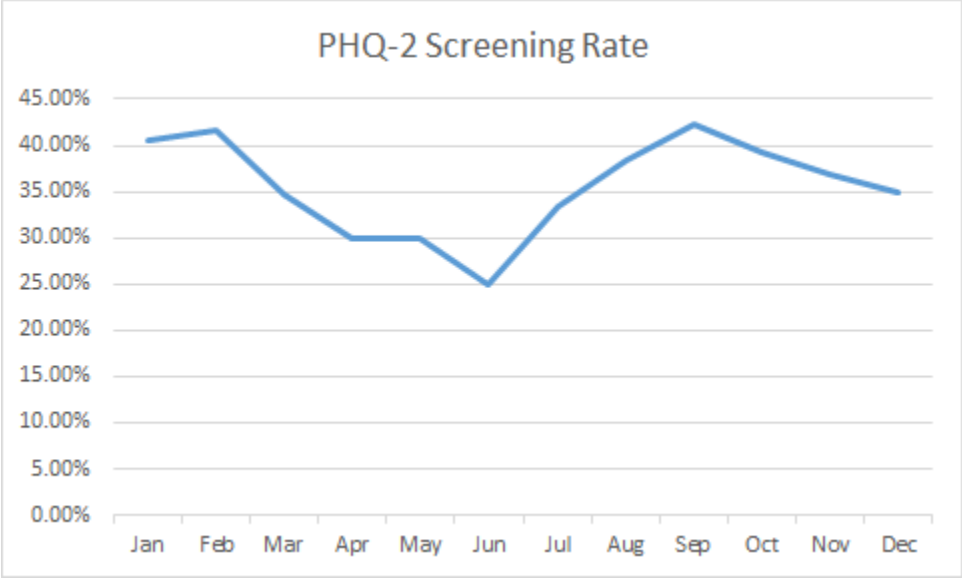
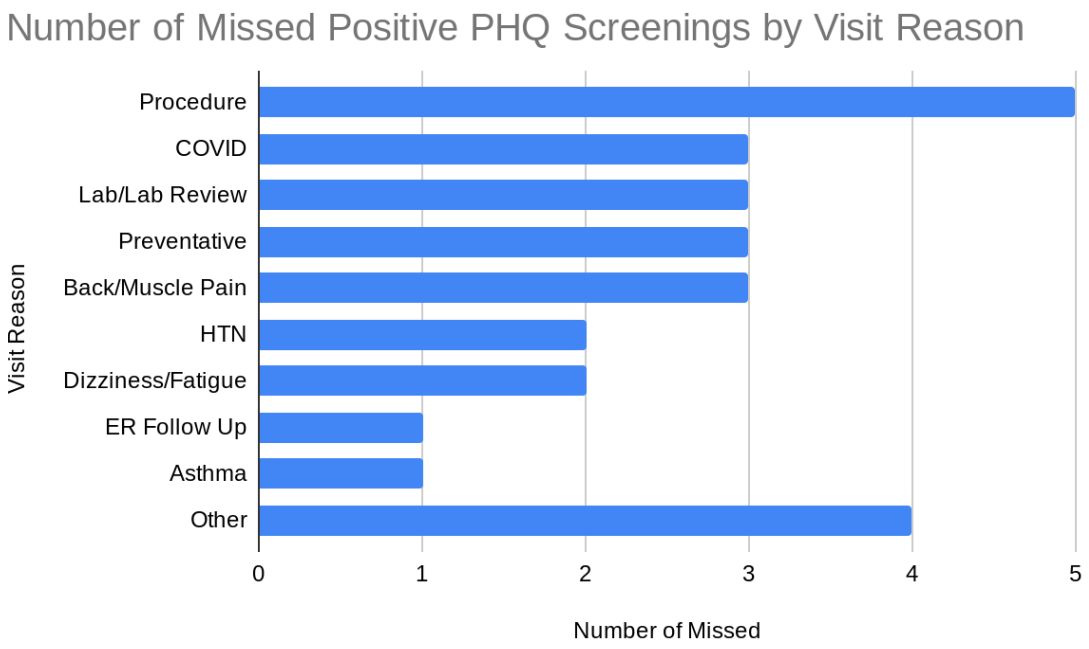


Chart reviews were conducted of all patients that had a score of 3 or greater on their PHQ-2 during December 2020-February 2021 to identify if the positive screening was addressed in visit documentation. There were a total of 269 positive PHQ-2 screenings throughout the implementation period and 27 of those were not addressed in the visit documentation. Approximately 10% of positive PHQ-2 screens were not addressed in visit documentation.

The instances of positive screenings that were not addressed in visit documentation were categorized according to chief complaint in order to identify any patterns of visit reason in which a PHQ-2 is less likely to be addressed in visit documentation. The most common visit type in which a PHQ-2 screening is not addressed is a procedure visit. Other than procedure visits, no clear patterns emerged.

Graph 3

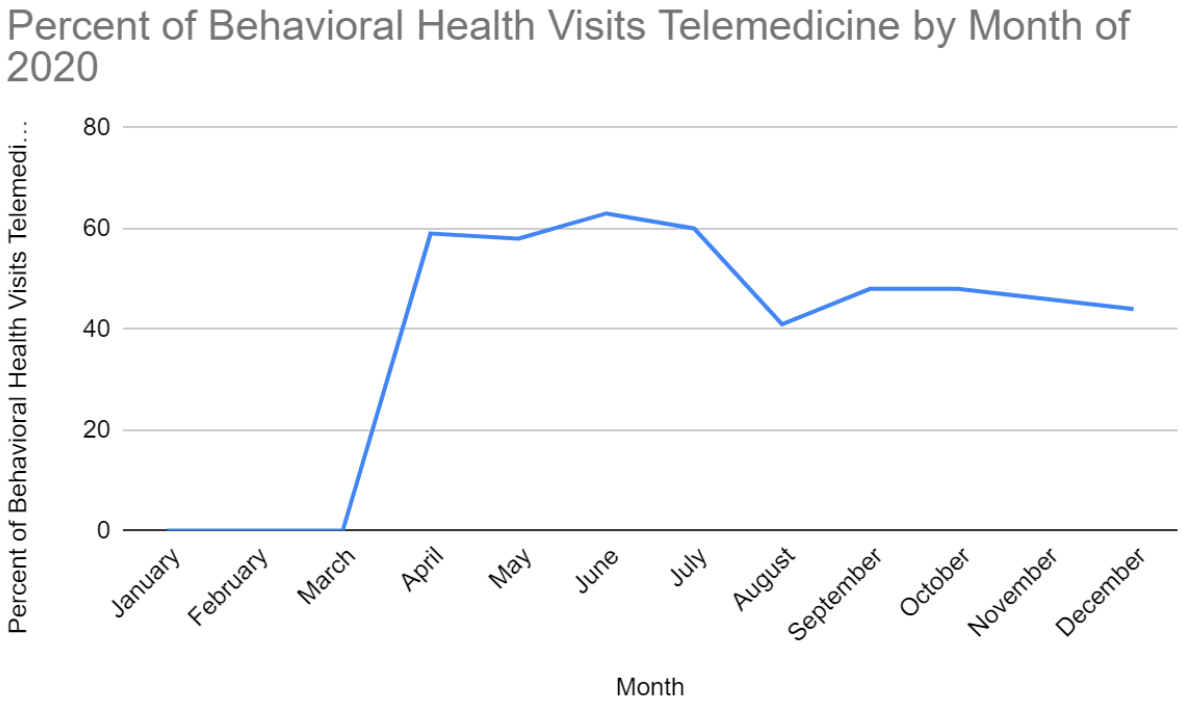


Balancing Measures

Behavioral health utilization was estimated using the average visits coded as provider per day worked by the Licensed Clinical Social Workers (LCSW). The average visits per day in December 2019-February 2020 was 6.14 as compared to the average visits in the second time frame, 8.40. This increase in utilization could also be attributed to the clinic losing several LCSWs. The clinic employed seven LCSWs in December 2019 and was down to three in January of 2021. Additionally, the referrals from family practice providers to behavioral health were counted in each time frame. There were 122 referrals to behavioral health from December 2019-February 2020 but only 38 from December 2020-February 2021. This decrease could also be explained by the fewer LCSWs available during the second time frame.

Below is a graph demonstrating the percent of behavioral health visits with an LCSW that were completed via telemedicine for each month in 2020. Prior to the COVID-19 pandemic, none of the behavioral health visits were done via telemedicine but this increased dramatically in April 2020.

Graph 4



Discussion

Healthcare Quality Impact

The data analysis demonstrated that the PHQ-2 screening rate was lower in the summer during the time the needs assessment was conducted. This screening rate improved when the FQHC returned to traditional clinic visits in the fall. The FQHC missed about 10% of positive PHQ-2 screenings in visit documentation and other than procedure visits, this wasn't correlated with any specific visit reason. It was found that patients did not have a higher mean PHQ-2 score during the COVID-19 pandemic when compared to before. The patients actually had a slightly lower PHQ-2 score in December 2020-February 2021. Additionally, no age group, gender, or race/ethnicity emerged as having a greater change in PHQ-2 score between the two time frames. It was difficult to examine the change in utilization of behavioral health services

as the availability of behavioral health providers reduced drastically. However, behavioral health visits completed via telemedicine increased dramatically in April 2020 and maintained around 50% for the remainder of the year.

The results of the project were unexpected and inconsistent with earlier national findings of an increase in depression symptoms in American adults (Ettman, et al., 2020). Although the results were unexpected, there are a few possible explanations for the decrease in depression symptoms during the COVID-19 pandemic. Typically, patents at an FQHC are of a low-socioeconomic status. The temporary income supports passed by Congress in late December 2020 are estimated to have reduced poverty from 16.1% in December of 2020 to 13.2% in January 2021 (Parolin & Curran, 2021). Those with the lowest income are 1.5 to 3 times more likely to experience depression and anxiety (Ridley, et al., 2020). Ridley et al. established a bidirectional causal relationship between poverty and mental illness. Poverty is associated with volatile earnings and expenses resulting in increased worrying which can worsen mental health. One possibility is that the stimulus, increased unemployment benefits, and increased SNAP benefits protected against mental health symptoms commonly associated with decreased income.

Additionally, the FQHC joined with other healthcare organizations in the region to create a coalition intended to meet needs that emerged while affected by COVID-19 in Hispanic and Marshallese populations. The services provided included food, help with rent and utilities, and assistance with navigation of healthcare needs and employment issues that arose due to COVID-19. Suggested future research includes identifying if the patients that benefited from this resource had less stress, anxiety, or depression during the COVID-19 pandemic.

Another possible explanation for the unexpected results could be related to the clinic's historical success with an integrated behavioral health model. The patients that received primary care at the clinic prior to the COVID-19 pandemic were likely screened with the PHQ-2 and offered behavioral health services as indicated. This previous behavioral health support may have set the patients up for success when coping with obstacles encountered during the pandemic.

One major difficulty identified in the study was the shortage of mental health providers. The FQHC currently has four open positions for LCSWs. These positions have been open for months. One recommendation for the FQHC would be to consider referring insured patients to remote behavioral health services while focusing the in-house services on uninsured patients. Specifically, remote behavioral health providers at another FQHC. This would allow more patients to receive services while the clinic lacks behavioral health providers.

Economic and Cost Benefits

Depression is one of the most financially burdensome disorders in the United States (Greenberg et al., 2015). The economic burden of individuals with major depressive disorder in 2010 was $210.5 billion. This includes direct medical costs, suicide-related mortality costs, and indirect workplace costs. Furthermore, improved screening, identification, and treatment could reduce the financial burden of the disease (Jiao et al., 2017).

The cost of this project includes the time the staff spends administering the depression screening tool. Using the PHQ-2 preliminarily and then proceeding to the PHQ-9 as indicated is a cost-effective strategy (Jiao et al., 2017). If patients screen positive for depression symptoms and a behavioral health referral is indicated, the additional visits with behavioral health are an economic benefit to the clinic. Additionally, in response to COVID-19 the 1135

waiver was enacted by the Centers for Medicare and Medicaid Services (CMS) which allows for increased reimbursement for telemedicine services (CMS, 2020). This allowed the FQHC to be reimbursed for telehealth behavioral health services when previously this reimbursement was not available. Many patients presenting for COVID-19 testing or vaccination are new to the clinic. Screening them for depression and referring to behavioral health as indicated will promote the continued use of services at the clinic by these new patients. The screening process will also increase awareness of behavioral health services offered at the clinic.

Limitations

Limitations of this project include that it examined data from only one health system with all locations in the Northwest Arkansas area. Transferability may be limited as the data only includes patients from an FQHC which may not be comparable to the general population. Another limitation is the data only includes a three-month time frame. Opening up the time frame to include the beginning of the COVID-19 pandemic may be more informative.

Imprecision in the design related to the screening rate is another limitation. Initially it was planned to notify care teams when their PHQ-2 screening rate fell below a specific threshold, but, when examining the data, practical implications limited the specificity of this metric. For example, some care teams may have seen very few adult patients in the previous week, and, therefore, their screening rate was not significant and did not warrant notification.

Sustainability

The FQHC aims to continue universal screening of adults with the PHQ-2 screening tool. The Quality Department plans to increase visibility of each care team's adherence to all preventative health screening goals through regular reporting.

Recommendations

Policy Implications

The FQHC continuously aims to increase their preventative health screening rates. This includes screenings for depression, cancer, diabetes, hypertension, and others. This project utilized a simple strategy of making care teams aware of their current screening rate when their rates fell below the clinic's goal. This strategy may be useful in increasing preventative screening rates other than depression. Additionally, completing chart reviews to determine if positive screenings were addressed in visit documentation helps to keep the care teams mindful of areas for improvement. The data analyzed on depression symptoms informs the FQHC of current risk factors in their patient population. The report and analysis could be completed at different time frames in the future in order to examine how the rates of depression symptoms shift over time and if any population groups should be targeted for intervention.

There has been a robust response to the COVID-19 pandemic locally and nationally. Most recently, the American Rescue Plan Act became law on March 11, 2021 (Congress, 2021). This includes another round of stimulus checks, funding aimed at reopening schools, and funding for vaccinations. It is estimated that this plan will reduce the annual poverty rate from 13.7% to 8.7% and lessen child poverty by half (Wheaton, et al., 2021).

The increase of remote mental health services during the COVID-19 pandemic may improve the access to mental healthcare moving forward. According to a survey from the US Census Bureau, the number of participants that reported having received mental health services in the past 4 weeks increased from 19.4% to 21.1% from August 2020 to February 2021 (CDC, 2021). The percentage of Arkansans that reported having received counseling or therapy in the past 4 weeks increased from 6.1% in August 2020 to 12.4% in February 2021. Future policies that may increase access to care include examining state insurance and provider licensing laws

in order to encourage mental health parity and continuing to strengthen telehealth infrastructure (Warren & Smalley, 2021). The Temporary Reciprocity to Ensure Access to Treatment (TREAT) Act was introduced on February 2, 2021 which will provide licensing reciprocity for healthcare professionals for any type of service provided to a patient located in another state (AAMC, 2021).

The FQHC will continue to promote universal depression screening of adult patients with a goal screening rate of 80%. The FQHC aims to increase preventative health practices overall with changes in the EMR and templates that promote a focus on preventative care.

Translation

The interventions within this study can be translated to other outpatient primary care clinics that offer behavioral health services. This project may be specifically relevant to other FQHCs.

Dissemination

The results of this project will be presented at the University of Arkansas Eleanor Mann School of Nursing DNP intensive on April 13, 2021. A poster presentation will be completed in order to visually convey the results.

The project will also be disseminated at the clinical site. A PowerPoint presentation will be created and presented to the Quality Department via Zoom. PowerPoint was selected for this presentation as it is an appropriate and engaging presentation tool for use on a remote digital platform such as Zoom. The Quality Department is essential in developing and implementing quality improvement projects at the site and the results of this project may inform future project goals.

Professional Reporting

The poster presentation will also be presented at the 2021 Arkansas Nurse Practitioner Conference in October. It is important in dissemination of this project to recognize the role primary care providers serve in addressing behavioral healthcare needs. Considering this, one peer-reviewed journal that would be appropriate for submission of this project is *The Nurse Practitioner: The American Journal of Primary Healthcare.*

Conclusion

Despite the unexpected results of this project, it remains vital to integrate behavioral health care with primary care (HRSA, 2020). This integration can involve the use of validated screening tools and appropriate referral upon positive screening. During the COVID-19 pandemic, patients may face unprecedented challenges that increase their need for behavioral health services. It is important to improve the accessibility of these services through avenues such as telemedicine.

Further research recommendations include examining the data on depression symptoms throughout the entire pandemic compared to previous years in order to determine how depression symptoms may have changed throughout the pandemic. Additionally, comparing the results of this project to a similar project in a traditional clinic setting as opposed to an FQHC. Another possibility for future research would be to use HRSA data to compare depression symptoms in patients at FQHCs throughout the pandemic nationally.

Upon the development of this project, the future of the pandemic and negative mental health symptoms seemed bleak. Throughout the fall, COVID-19 cases and deaths rose with no apparent end in sight. At the start of implementation in December, vaccinations were just on the horizon. As of March 22, 13.45% of the US population has received at least one dose of the

COVID-19 vaccine with numbers growing by millions each day (WHO, 2021). With the future of the pandemic still unknown but optimistic, it is important to continue to provide comprehensive care considering psychological and sociological impacts on health.

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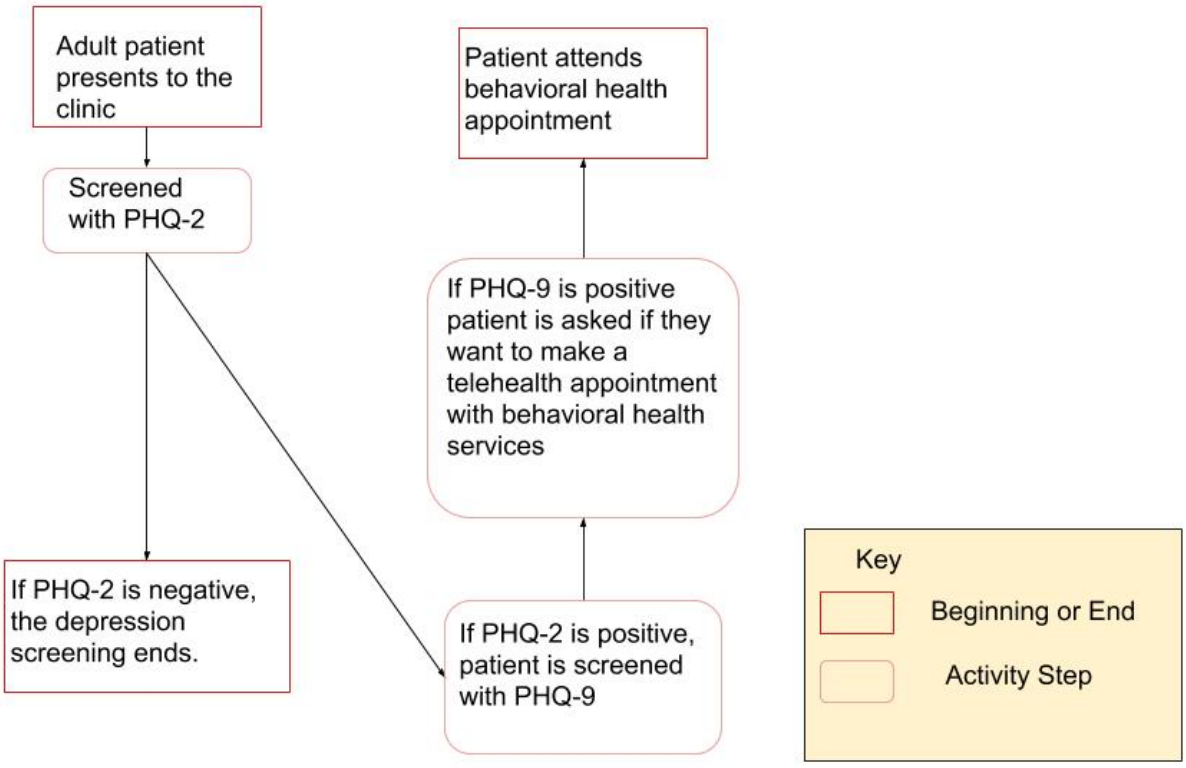
Appendices

A. Process Flowchart



B. Evidence Grid

Authors	Year	Country where research conducted	Theory guiding the study and identification of variables	Independent or Treatment Variable(s)	Dependent or Outcome Variable(s)	Design type	Sample (N =) Method	Data Collection tools	Brief Summary of Results	Strength of evidence
Wang, C., Pan, R., Wan, X., Tan, Y., Xu,	2020	China	N/A	Time of survey, one conducted during	Results on surveys	Observational/ Longitudinal	N=1738; snowball samplin	National University of Singapore	Study demonstrated stable levels of	II

L., McIntyre, R., Choo, F., Tran, B., Ho, R., Sharma, V.				initial outbreak and epidemic peak			g strategy	COVID-19 questionnaire, Impact of Events Scale-Revised, Depression, Anxiety, and Stress Scale	stress, anxiety and depression despite sharp increases in the number of COVID-19 cases. Age range 12-21 demonstrated higher psychological impact. The presence of physical symptoms increased the psychological impact	
Yang, H., Ma, J.	2020	China	N/A	Anger, sadness, stress, worry, smile/laugh, enjoyment and happiness	Emotional well being	Nationally representative surveys using the same nationwide particip	N1=11,131 N2=3000	Index of emotional well being	The onset of the coronavirus epidemic led to a 74% drop in overall emotio	II

						ant panel			nal well being	
Raker, E., Zacher, M., Lowe, S.,	2020	United States	N/A	bereavement, fearing for loved ones' well-being, and lacking access to medical care and medications	Physical and mental health 1 year and 12 years post disaster	longitudinal	n=1019	Impact of events scale, Kessler-6	The most robust predictors of health 1, 4, and 12 years following disaster are loss of loved one, fear for one's safety, and uncertain access to medical care	II
Gonzalez-Sanguino, C., Ausin, B., Angel Castellanos, M., Saiz, J., Lopez-Gomez, A., Ugidos, C., Munoz, M.	2020	Spain	N/A	COVID-19	Psychological impact, loneliness, social support, spiritual well being	Cross-sectional	N=3480; snowball	PHQ-2 GAD-2	The 18.7% of the sample revealed depressive symptomatology, the 21.6% anxiety and the 15.8% PTSD.	II
Li, W., Yang, Y., Liu, Z., Zhang, Q.,	2020	China				Expert Opinion/Editorial			Progression of Mental Health Services	VI

Zhang, L., Cheung, T., Xiang, Y.									during the COVID-19 Outbreak in China	
Tian, F., Li, H., Tian, S., Yang, J., Shao, J., Tian, C.	2020	China	N/A	COVID-19 pandemic	Results on symptom checklist-90	observational	N=1132; snowball	Symptom checklist-90	COVID-19 has significant adverse psychosocial effects on ordinary citizens	II
Li, S., Wang, Y., Xue, J., Zhao, N., Zhu, T.	2020	China	N/A	Before and after epidemic	Psychological characteristics of internet posts	longitudinal	N=17865	Online ecological recognition	Results indicate significant differences of emotional indicators before and after the start of epidemic	II
Marques, L., Bartuska, A., Cohen, J., & Jeong, S.	2020	USA				Practice Recommendations /Expert opinion			Three steps to flatten the mental health need curve during COVID-19 pandemic	IV
Wu, Y., Zhang,	2020	China	N/A	Declaration of	Depression	cross-sectional	Edinburgh	N=4124	Pregnant	II

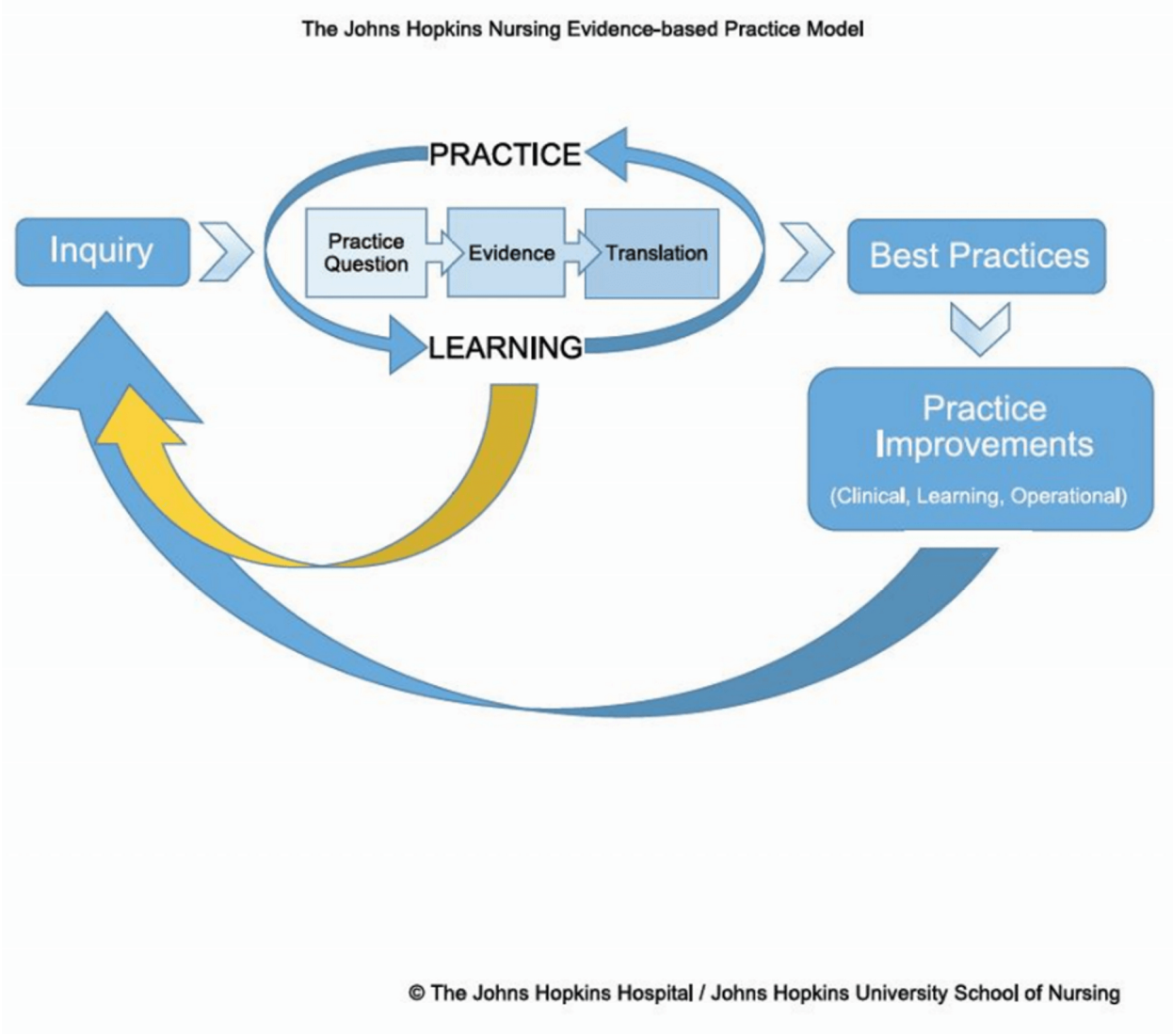
C., Liu, H., Duan, C….Huang, H.				COVID-19 epidemic	symptoms		Postnatal Depression Scale		women assessed after declaration of epidemic ad higher rates of depression symptoms	
Berthelot, N., Lemieux , R., Garon-Bissonnette, J., Drouin, C., MDuke Social Support Scale-Social Interaction Subscaleartel, E., Maziade, M.	2020	Canada	N/A	Before and after pandemic	Depression, anxiety and PTSD symptoms	longitudinal	Kessler distress scale and post-traumatic checklist for DSM 5	N=1754; convenience	Women during pandemic reported higher depression, anxiety, and PTSD symptoms	II
Hao, F., Tan, W., Jiang, L. Zhang, L., Zhao, X., Zou, Y., Hu, Y., Luo, X., Jiang, X., McIntryre, R., ...Tam, W.	2020	China	N/A	History of severe psychiatric condition	Symptoms of depression anxiety and stress during COVID-19 outbreak	cross-sectional	Impact of event scale and depression anxiety and stress scale	N=76 and 109; convenience sampling	People with psych history had greater symptoms during outbreak	III

Staples, L. Dear, B., Gandy, M., Fogliati, V., Fogliati, R., Karin, E., Nielssen, O., Titov, N.	2019	Australia	N/A	Mental health screening tools	Specificity and validity	Research trial sample =4 RCTs	PHQ-9, GAD-7, K-10	N=993 and 1389	PHQ-2 has optimal specificity	I
Mazza, Ricci, Biondi, Colasanti, Ferracuti, Napoli, Roma	2020	Italy	N/A	COVID-19 outbreak	Depression, anxiety, and stress	Cross-sectional	DASS-21	N=2766; snowball	Female gender, negative affect, and detachment were associated with higher levels of depression, anxiety, and stress	III
Agteren, J., Bartholomaeus, J., Fassnaucht, D., Iasiello, M., Ali, K., Lo, L., Kyrios, M.	2020	Australia	N/A	Before and during COVID-19 outbreak	Mental wellbeing and resilience	Cross sectional	Satisfaction with life scale	Control n=1264 Covid n=673; snowball	Worse outcomes on all mental health measures during COVID-19 than before	II
Fitzpatrick, Harris, Drawve	2020	US	N/A	COVID-19	anxiety, depression, and fear	Cross sectional	Center for Epidemiologic Studies	n=10,368; convenience with	Fear of COVID is correlated with	II

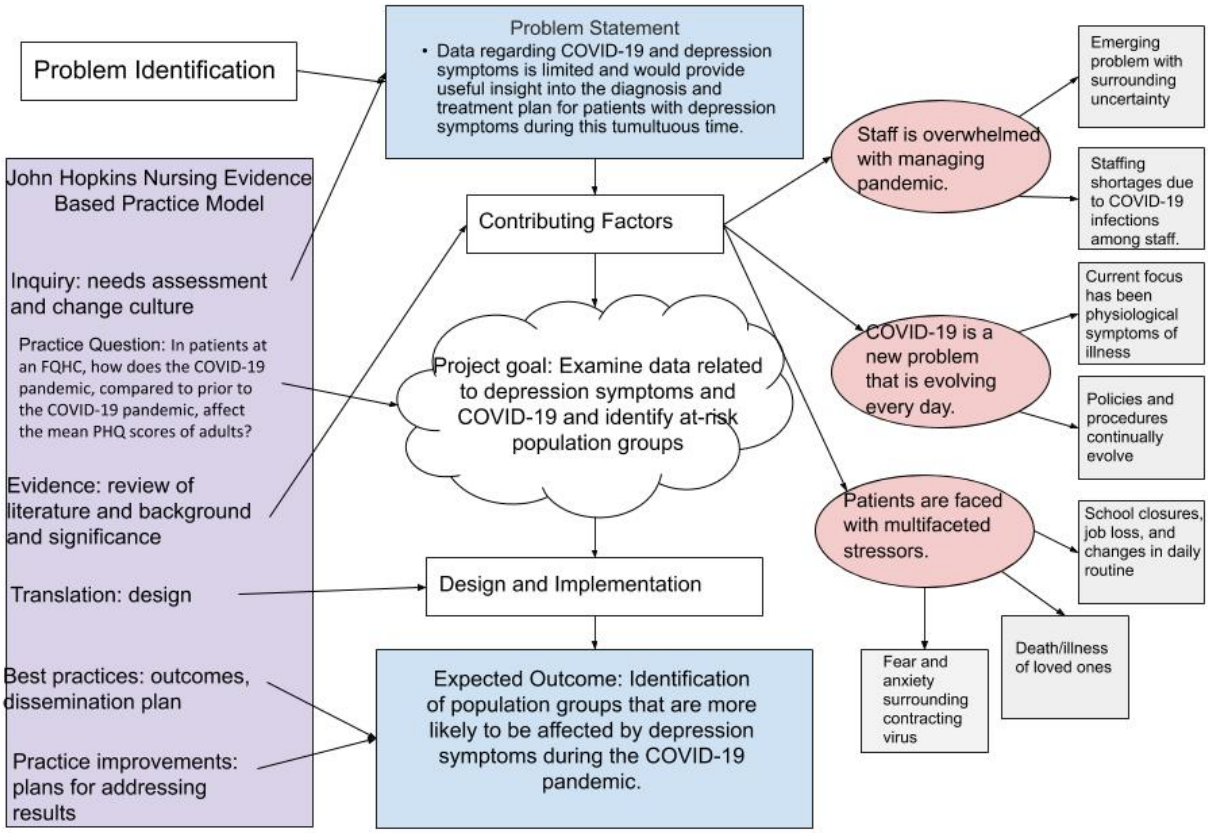
							Depression scale and GAD-7	post-stratification weighting	depression	
Palylyk-Colwell & Argáez	2018	Canada	N/A	telemedicine	Outcomes in treatment of depression	meta-analysis	Hamilton Depression Rating Scale, PHQ-9	Synthesis of findings from RCTs, systematic review and meta analysis	telemedicine therapy is as effective as in person therapy in treating depression	I
Maurer, Raymond, Davis	2018	US	N/A			CPG			Guideline for screening and diagnosing depression	I
Levis, Sun, He, Wu, Krishnan, Bhandari, Neupane, Imran, Brehaut, et al.	2020	US	N/A	PHQ-9 vs. PHQ-9 +PHQ-2	Sensitivity and specificity	Systematic review and meta analysis		n=44318	No difference in likelihood of positive with only PHQ-9 and tandem PHQ-2 >9	I
Rohr, Muller, Jung, Apfelbucher, Seidler, Riedell-Heller	2020	Germany	N/A	Social isolation/quarantine	Negative psychosocial outcomes	Rapid Review		13 studies	Quarantine measures during serious coronavirus outbreaks have extensive negativ	III

									e conseq uences for mental health	

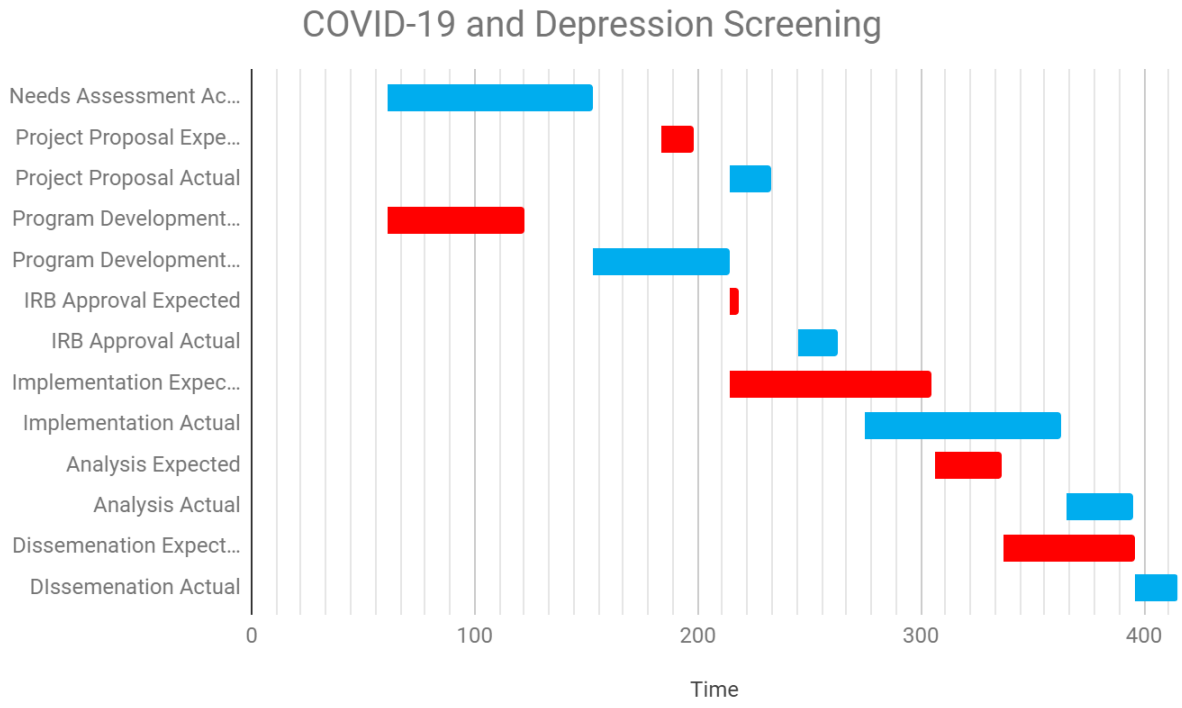
C. Theoretical Framework



D. Concept Map



E. Gantt Chart Timeline, Expected vs. Actual



F. Statement of Mutual Agreement for DNP Guidance

G. Needs Assessment Questionnaire

Mental Health Care Amid COVID-19

The purpose of this questionnaire is to gain insight from Community Clinic staff regarding gaps in mental health care related to the COVID-19 pandemic. This information will contribute to a better understanding of gaps in care, strategies that have been used to reduce gaps, and identification of new strategies.

Please list your role:

Years of Experience:

1. Have you identified a gap in mental health care related to COVID-19?

2. Why do you think this gap in care exists?

3. Have you identified any poor health outcomes due to this gap in care?

4. What strategies have been implemented to address this gap in care?

5. What strategies would you recommend to address this gap in care?

6. Do you feel the staff would support an initiative to improve this gap in care?

H. Data Use Agreement

DATA USE AGREEMENT FOR LIMITED DATA SETS

This Data Use Agreement ("Agreement"), effective as of October 28, 2020 ("Effective Date"), is entered into by and between **Kaylee Armendariz** ("Recipient") and **St. Francis House NWA, Inc. dba Community Clinic** ("Covered Entity"). The purpose of this Agreement is to provide Recipient with access to a Limited Data Set ("LDS") for use in the following titled research project: **Depression Symptoms and COVID-19** (Project Name) under the direct supervision of **Gillian Woods & Judd Semingson** in accord with the HIPAA Regulations.

1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.

2. Preparation of the LDS. Covered Entity shall prepare and furnish to Recipient a LDS in accord with the HIPAA Regulations. **NOTICE: This agreement is valid only if the Data do not include any of the following "Prohibited Identifiers": Names; postal address information other than town, cities, states and zip codes; telephone and fax numbers; email addresses, URLs and IP addresses; social security numbers; certificate and license numbers; vehicle identification numbers; device identifiers and serial numbers; biometric identifiers (such as voice and fingerprints); and full face photographs or comparable images.**

3. Minimum Necessary Data Fields in the LDS. In preparing the LDS, Covered Entity or its Business Associate shall include the data fields specified by the parties from time to time, which are the minimum necessary to accomplish the purposes set forth in Section 5 of this Agreement.

4. Responsibilities of Recipient.

   Recipient agrees to:

   a. Use or disclose the LDS only as permitted by this Agreement or as required by law;

   b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

   c. Report to Covered Entity any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law, including the presence of prohibited identifiers in the LDS;

   d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Recipient under this Agreement; and

e. Not use the information in the LDS, alone or in combination to identify or contact the individuals who are data subjects.

5. Permitted Uses and Disclosures of the LDS. Recipient may use and/or disclose the LDS only for the Research described in this Agreement or as required by law.

6. Term and Termination.

   a. Term. The term of this Agreement shall commence as of the Effective Date and terminate one (1) year from Effective Date. Should the Recipient desire to keep the LDS for a longer period, a justification in writing should be made to the Covered Entity.

   b. Termination by Recipient. Recipient may terminate this agreement at any time by notifying the Covered Entity and returning or destroying the LDS.

   c. Termination by Covered Entity. Covered Entity may terminate this agreement at any time by providing thirty (30) days prior written notice to Recipient.

   d. For Breach. Covered Entity shall provide written notice to Recipient within ten (10) days of any determination that Recipient has breached a material term of this Agreement. Covered Entity shall afford Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Covered Entity.

   e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

7. Miscellaneous.

   a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

   b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

   c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

COVERED ENTITY

By: 

Name: Judd Semingson

Title: Chief Executive Officer

RECIPIENT

By: 

Name: Kaylee Armendariz

Title: Graduate Student Researcher

H. Site Approval

communityclinic
A HEALTHCARE MINISTRY OF ST. FRANCIS HOUSE NWA

Fayetteville Medical Clinic
3162 W. Martin Luther King Blvd. | Fayetteville, AR 72704 | 479-438-2280
Springdale Family Practice, Dental & Administration
610 E. Emma Ave. | Springdale, AR 72764-4685 | 479-751-7417
Springdale Family Practice, Pediatrics & Women's Health
614 E. Emma Ave., Suite 300 | Springdale, AR 72764-4469 | 479-751-7617
Rogers Medical Clinic
1233 W. Poplar | Rogers, AR 72756-4249 | 479-636-9235
Rogers Dental Clinic
3710 Southern Hills Blvd., Suite 700 | Rogers, AR 72758-8041 | 479-936-8600
Siloam Springs Medical Clinic
500 S. Mount Olive, Suite 200 | Siloam Springs, AR 72761-3602 | 479-524-9550

10/28/2020

University of Arkansas IRB:

This letter signifies Community Clinic approval of the proposed DNP project, *Depression Symptoms and COVID-19*, by principal investigator, Kaylee Armendariz.

Sincerely,

Judd Semingson, CEO

I. IRB Approval Letter

UNIVERSITY OF ARKANSAS

To:	Kaylee Marie Armendariz
From:	Douglas J Adams, Chair IRB Expedited Review
Date:	11/19/2020
Action:	**Exemption Granted**
Action Date:	11/19/2020
Protocol #:	2011296254
Study Title:	Depression Symptoms and COVID-19

The above-referenced protocol has been determined to be exempt.

If you wish to make any modifications in the approved protocol that may affect the level of risk to your participants, you must seek approval prior to implementing those changes. All modifications must provide sufficient detail to assess the impact of the change.

If you have any questions or need any assistance from the IRB, please contact the IRB Coordinator at 109 MLKG Building, 5-2208, or irb@uark.edu.

cc: Marilou D Shreve, Investigator